Claims

1. A solid-state laser diode comprising:

a laser diode for exciting a solid laser medium;

a constant current source for supplying a constant current to the laser diode;

voltage measurement means for measuring a voltage at both ends of the laser diode; and

abnormality detection means for detecting an abnormality at the laser diode based on an output of the voltage measurement means.

2. A solid-state laser device comprising:

a plurality of laser diodes connected in series, for exciting a solid laser medium;

a constant current source for supplying a constant current to the laser diodes;

voltage measurement means for measuring the voltage at both ends of the laser diodes; and

abnormality detection means for detecting an abnormality at the laser diodes based on the output of the voltage measurement means.

3. The solid-state laser device according to claim 2, wherein the voltage measurement means measures the voltage of

the plurality of laser diodes individually to output the individual measured voltage to the abnormality detection means.

4. The solid-state laser device according to claim 2, wherein when n (n is a natural number equal to or greater than four) laser diodes are connected, the voltage measurement means measures the voltages of sets including m laser diodes (m is a natural number smaller than n) individually to output the voltages to abnormality detection means.

5. The solid-state laser device according to one of claims 1 to 4, wherein a normal range having a finite width defined an upper limit value and a lower limit value as reference values of the voltage for determining abnormality of the laser diode is set; and

when the voltages at the laser diodes measured by the voltage measurement means are equal to or higher than the upper limit value or equal to or lower than the lower limit value, the abnormality detection means outputs an abnormality detection signal.

6. The solid-state laser device according to claim 5, further comprising:

reference value change means for changing the normal

range for the measured voltage set at the abnormality detection means on a basis of an input current value.

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